



nature publishing group



**PRYING INTO PRIONS**  
Underappreciated regulators of cell phenotype

**Asymmetric division in development and cancer**  
Not a game of two halves

► **COVER:** 'Lighting up division' by Vicky Summersby, inspired by the Review on p849.



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Since the discovery of proteins as the organic compounds that are encoded by DNA, our understanding of their behaviour has greatly advanced. We now know that the post-translational modification of proteins, either chemically or by small proteins, often determines their conformation, stability, activity and function. Many of our articles discuss post-translational modifications and this issue is no exception.

On p834, Trusolino, Bertotti and Comoglio describe how MET signalling — which promotes tissue remodelling by integrating growth, survival and migration cues — is regulated to achieve a range of biological responses. Unsurprisingly, protein post-translational modifications are important for this. Indeed, MET depends on the phosphorylation of Tyr residues for its activation and to recruit signal-relay molecules. Furthermore, monoubiquitylation of MET, which leads to its internalization in the cell, is one of the mechanisms by which MET signalling can be terminated.

Gareau and Lima (p861) discuss small ubiquitin-related modifier (SUMO) and the mechanisms that regulate its conjugation to target proteins. Interestingly, these mechanisms include other post-translational modifications, and the success of sumoylation is influenced by the phosphorylation state of the substrate, as well as by competition with ubiquitylation and acetylation for the same Lys residue. However, as Tuite and Serio (p823) point out, “post-translational modifications are not the whole story” when it comes to fine-tuning protein behaviour. They describe how changes in protein conformation that are driven by prions might also be a novel regulator of cell phenotype.

Finally, we invite you to take part in our [reader survey](#). By completing this you can help to shape the future content of *Nature Reviews* journals and have the chance to win an iPad — good luck!

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